

REFLECTION[®]
PERIPHERAL HOLE
Acetabular Components

REFLECTION
MULTI-HOLE
Acetabular Components



Reflecting the Commitment to Low Wear

Designed with fixation and surgical efficiency in mind, the REFLECTION® Acetabular Cup System minimizes wear and maximizes the integrity of the modular connection. REFLECTION Acetabular Components offer a variety of choices, allowing the surgeon versatility for indication and preference.

The MICROSTABLE® Liner Locking Mechanism and the patented polished inner surface reflect the continued leadership of Smith & Nephew in advanced technology.

Technique described by

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Nota Bene: This technique description herein is made available to the healthcare professional to illustrate the authors' suggested treatment for the uncomplicated procedure. In the final analysis, the preferred treatment is that which addresses the needs of the patient.

REFLECTION[◇] Acetabular Components

Design Features

Liner/Shell Stability

The MICROSTABLE[®] Liner Locking Mechanism is designed to provide excellent liner/shell stability and minimize micromotion. Many independent studies have demonstrated that the MICROSTABLE Locking Mechanism produced the least amount of liner/shell motion of the designs tested.¹⁻⁴ Internal Smith & Nephew testing confirms the superiority of the MICROSTABLE Locking Mechanism when measured against other competitive designs. The MICROSTABLE Locking Mechanism further demonstrates the commitment of Smith & Nephew to minimize polyethylene wear due to micromotion.⁵

Polishing

Motion between the polyethylene liner and metal shell has been proven to cause wear on the backside of the plastic liner. A rougher metal counterface produces more abrasion and thus more wear. This material property supports the need for a refined finish on the inside of the shell. The polished surface of REFLECTION Acetabular Component is a patented feature and the roughness of the shell's inner surface is within the standard usually reserved for femoral heads.⁶

Range of Motion

Smith & Nephew has been in the forefront of optimizing femoral neck designs to minimize impingement and thereby help maximize range of motion (ROM) and stability. However, Smith & Nephew realizes that while femoral neck geometry is important, it is only half of the equation in regards to maximizing ROM. REFLECTION liners are also

designed to minimize impingement with the low profile overhang as well as maximize ROM when combined with Smith & Nephew stems. Thus, Smith & Nephew hip arthroplasty components offer an advantage over competitive hip designs.⁷

Porous Coating

All REFLECTION shells feature ROUGHCOAT[®] Porous Coating. ROUGHCOAT Porous Coating provides a scratch fit, which helps to enhance initial fixation and stability. The 2-3 bead layering has a 20–40% average porosity and 170 microns average pore size. This pore size has been shown to promote bone in-growth.⁸ The sintered beads provide a three-dimensional interlock with bone that plasma-sprayed coatings cannot offer.⁹

Hole Cover

REFLECTION shells have an apex hole, which allows easy assessment of cup seating.¹⁰ The watertight apex hole cover has a unique design that seals the shell. Covering the apex hole prevents debris transfer and helps minimize polyethylene creep.¹¹

Polyethylene Thickness

Unlike many acetabular cup designs, the polyethylene thickness of REFLECTION is not compromised by the locking mechanism. The chart below lists the poly thickness for each liner size. If additional thickness is desired, the lateralized liners can be used. These liners are designed to have 4mm of additional polyethylene at the apex and approximately 2mm of additional polyethylene in the load-bearing area.

Shell Sizing and Liner Thickness

Liner Thickness (mm)		D	E	F	G	H	J
Shell ODs	MULTI-HOLE	46-48	50-52	54-56	58-60	62-64	66-68
	PERIPHERAL HOLE	54-56	58-60	62	64-66	68-70	72-80
Femoral Head Size	22mm	8	10	12	13	15	17
	26mm	6	8	10	11	13	15
	28mm	5	7	9	10	12	14
	32mm	N/A	5	7	8	10	12
	36mm	N/A	N/A	5	6	8	10

Range of Motion

Liner Style	Head Diameter (mm)				
	22	26	28	32	36
Neutral	143°	140°	142°	145°	148°
20P Overhang	122°	119°	122°	126°	128°
35P Overhang	N/A	N/A	107°	111°	113°
Anteverted	130°	133°	135°	138°	139°
Constrained	73°	79°	87°	96°	N/A

REFLECTION[®] PERIPHERAL HOLE and MULTI-HOLE Shells

The REFLECTION PERIPHERAL HOLE Shells are intended for use when there is a need for adjunctive screw and/or peg fixation. There are additional screw holes around the periphery that accept 5.0mm cancellous bone screws. In addition to the peripheral screw holes, the shells have multiple dome holes and ROUGHCOAT[®] Porous with HA coating.

In order to maintain the integrity of the shell and accommodate the peripheral screw holes, the inner diameter of the REFLECTION PERIPHERAL HOLE Shell is decreased approximately two liner sizes. This allows for the REFLECTION PERIPHERAL HOLE Shell to retain adequate material strength and mate with existing REFLECTION liners. For example, the 62mm REFLECTION PERIPHERAL HOLE Shell uses a size F liner, which fits into a 54mm or 56mm REFLECTION THREE-HOLE Shell. Due to this drop in inner diameter, the shells are not available smaller than 54mm (liner size D). Sizes 62mm – 80mm shells will work with 36mm liners and 28mm constrained liners. The shells are HA coated to improve bony contact.

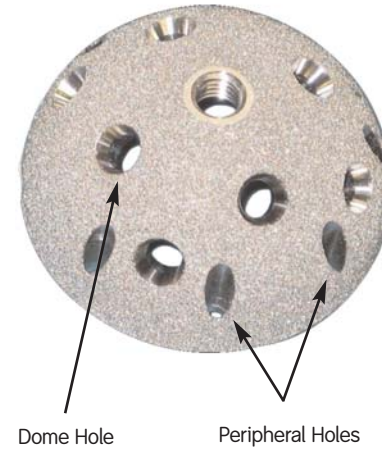
The peripheral holes provide for additional screw fixation in a deficient acetabulum. The holes are evenly spaced around the periphery to provide versatile screw placement. The peripheral screws are 5.0mm in diameter and provide greater strength than the smaller screws that are utilized in many competitive peripheral hole acetabular shell designs.

The dome screw holes accept 6.5mm Spherical Head Cancellous Screws or REFLECTION Locking Head Pegs. The locking head pegs are available in 15mm, 25mm and 35mm lengths. The REFLECTION PERIPHERAL HOLE Screws are available in 25mm to 70mm lengths, while the dome (spherical) screws are available in 15mm to 70mm lengths, both in 5mm increments.

Smith & Nephew offers REFLECTION MULTI-HOLE shells for cases where peripheral hole screws are not necessary or for smaller acetabulum. These shells are available with or without HA coating and are available in sizes 50mm to 68mm. They are fully hemispherical and have between 8 and 12 dome screw holes depending upon the shell size.

Both the REFLECTION PERIPHERAL HOLE and REFLECTION MULTI-HOLE shells feature the MICROSTABLE Liner Locking Mechanism. The MICROSTABLE mechanism is unsurpassed in liner shell stability. The liner/shell interface design maximizes conformity and minimizes stress on the polyethylene. By utilizing this same locking mechanism, both shell designs can utilize all of the liner styles currently available in both conventional polyethylene and XLPE.

REFLECTION PERIPHERAL HOLE



REFLECTION MULTI-HOLE



REFLECTION[®] PERIPHERAL HOLE and MULTI-HOLE Surgical Technique

The technique for the REFLECTION PERIPHERAL HOLE and MULTI-HOLE Hemispherical Shells is similar to the technique for implantation of REFLECTION THREE-HOLE Shells. The only difference is the number of screw holes and the orientation of the screws.

1. Acetabular exposure – The surgeon should select the appropriate exposure based upon the particular requirements of each individual case.

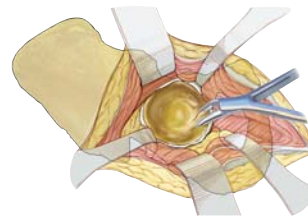
If possible, prior implants and bone cement that would impede reaming or shell impaction should be removed. Grafting of bony defects, if any, should be done prior to implantation of the new shell. Grafting can be done with bulk or morselized bone graft.

2. Sequential acetabular reaming should be done to prepare the acetabular host bone to accept the metal shell. If bone stock allows, reaming should be done to optimize bone contact against both the posterior and anterior walls.

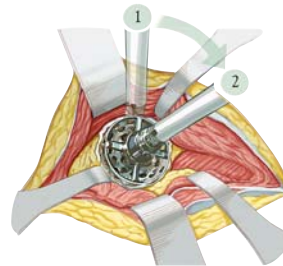
3. To assess fit and bony contact, insert a trial into the acetabulum equal to the size of the last reamer used. If desired, trial liners can be used to assess cup position at this time.

To press-fit the porous-coated REFLECTION PERIPHERAL HOLE or MULTI-HOLE Shells, the acetabulum should be under-reamed by 1mm to 2mm, depending on bone quality and acetabular size. The appropriate amount of press-fit should be chosen based upon surgeon experience and an assessment of bone quality.

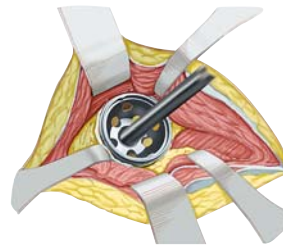
4. The implant should be threaded onto the positioner/impactor and impacted into place. Alignment can be estimated from the X-bar alignment guide which indicates 45° abduction and 20° anteversion. After insertion, the X-bar should be removed and the alignment guide unscrewed from the shell.



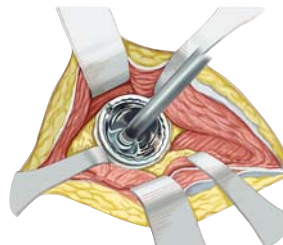
1. Acetabular Exposure



2. Acetabular Reaming



3. Acetabular Trialing

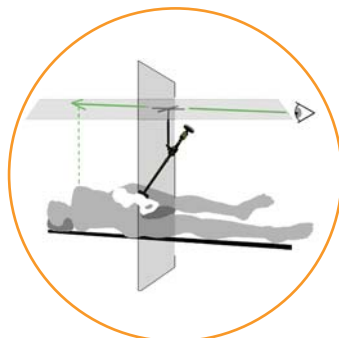


4. Acetabular Shell Insertion

Instrument Tips:

The positioner, like the reamer handle, has an easy-to-remove spring to simplify cleaning; however, the spring and nut cannot detach from the shaft, which prevents items from being misplaced.

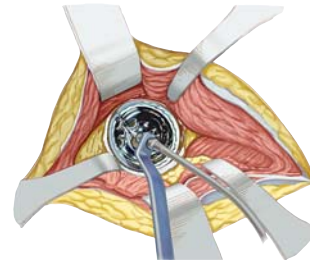
The positioner references 45° of abduction and 20° of anteversion.



Surgical Tip:

The change in pitch that occurs as the shell is seated against the medial acetabular wall is often audible. In addition, a depth gauge can be inserted through the screw holes and apex hole to determine the adequacy of shell seating.

5. Dome and peripheral hole screws can be inserted at this time. It is recommended that dome screws be inserted first to stabilize and fully seat the cup. The peripheral screws can then be inserted. The orientation of the peripheral screws should be perpendicular to the plane of the face of the shell. For each screw, the hole should be pre-drilled using a drill guide and flexible drill. The length should be assessed using a depth gauge and the proper length screw selected. The screw can be inserted using any of the REFLECTION® screwdrivers.

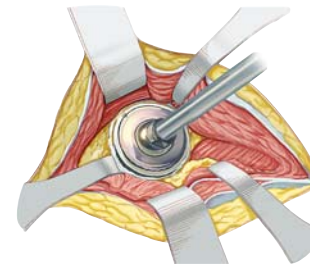


5. Acetabular Screw Insertion

Pegs can be inserted in the dome holes. To use pegs, pre-drill the appropriate hole using the peg drill guide and peg drill. To assemble, first push the peg into the hole. Then impact the peg by placing the peg impactor into the hole in the top of the peg and hitting the impactor with a mallet to seat the peg fully.

Screws and pegs should be inspected to ensure that they are not sitting proud, which could interfere with proper seating of the liner.

6. A trial liner can be used to help choose the appropriate liner style, head size and liner orientation.



6. Acetabular Liner Insertion

Prior to final liner insertion, the locking mechanism should be inspected and any impeding bone or soft tissue should be removed. The liner should first be inserted by hand to properly align the splines, then the liner should be impacted into place using a mallet and the positioner/impactor with the appropriate liner impactor head.

The liner can be removed and reinserted up to three times without compromising the integrity of the MICROSTABLE® Liner Locking Mechanism.

REFLECTION[◇] Acetabular Components

Catalog



REFLECTION HA PERIPHERAL HOLE Shells

Cat. No.	O.D. (mm)
7133-5454	54
7133-5456	56
7133-5458	58
7133-5460	60
7133-5462	62
7133-5464	64
7133-5466	66
7133-5468	68
7133-5470	70
7133-5472	72

REFLECTION HA PERIPHERAL HOLE Shells (Jumbo)

Cat. No.	O.D. (mm)
7133-5474	74
7133-5476	76
7133-5478	78
7133-5480	80



REFLECTION MULTI-HOLE Shells

Cat. No.	O.D. (mm)
7133-5150	50
7133-5152	52
7133-5154	54
7133-5156	56
7133-5158	58
7133-5160	60
7133-5162	62
7133-5164	64
7133-5166	66
7133-5168	68

REFLECTION HA MULTI-HOLE Shells

Cat. No.	O.D. (mm)
7133-5250	50
7133-5252	52
7133-5254	54
7133-5256	56
7133-5258	58
7133-5260	60
7133-5262	62
7133-5264	64
7133-5266	66
7133-5268	68



REFLECTION PERIPHERAL HOLE Screws (Cancellous)

Cat. No.	Size (mm)
7133-2526	5.0 X 25
7133-2531	5.0 X 30
7133-2536	5.0 X 35
7133-2541	5.0 X 40
7133-2546	5.0 X 45
7133-2551	5.0 X 50
7133-2556	5.0 X 55
7133-2561	5.0 X 60
7133-2566	5.0 X 65
7133-2571	5.0 X 70



REFLECTION Spherical Head Dome Hole Screws (Cancellous)

Cat. No.	Size (mm)
7133-2515	6.5 X 15
7133-2520	6.5 X 20
7133-2525	6.5 X 25
7133-2530	6.5 X 30
7133-2535	6.5 X 35
7133-2540	6.5 X 40
7133-2545	6.5 X 45
7133-2550	6.5 X 50
7133-2555	6.5 X 55
7133-2560	6.5 X 60
7133-2565	6.5 X 65
7133-2570	6.5 X 70



REFLECTION Locking Head Pegs for Dome Holes

Cat. No.	Size (mm)
7133-2518	15
7133-2528	25
7133-2538	35



REFLECTION Screw Hole Cover

Cat. No.	7133-2500
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REFLECTION Apex Hole Cover (watertight)

Cat. No.	7133-0001
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REFLECTION[®] Acetabular Components

Catalog



REFLECTION Peripheral Screw Drill

Cat. No.	Length (mm)
7136-1525	25
7136-1535	35
7136-1550	50
7136-1570	70



REFLECTION Peripheral Screw Drill Guide

Cat. No. 7136-1519



REFLECTION Flexible Screw Drill

Cat. No.	Length (mm)
7136-2915	15
7136-2925	25
7136-2935	35
7136-2950	50

REFLECTION Modular Drill Shaft

Cat. No. 7136-2519

REFLECTION Modular Drill Bit

Cat. No.	Length (mm)
7136-2515	15
7136-2520	20
7136-2525	25
7136-2530	30
7136-2535	35
7136-2540	40
7136-2545	45
7136-2550	50
7136-2560	60
7136-2570	70



REFLECTION Screw Drill Guide

Cat. No. 7136-2919



REFLECTION Peg Drill

Cat. No.	Length (mm)
7136-2918	15
7136-2928	25
7136-2938	35



REFLECTION Peg Drill Guide

Cat. No. 7136-2917



REFLECTION Angled Peg Impactor

Cat. No. 73-2117



REFLECTION Peg Removal Tool

Cat. No. 73-2127



REFLECTION Peg Removal Pin

Cat. No. 7136-2129



REFLECTION Hole Cover Inserter

Cat. No. 73-2133



REFLECTION Flexible Screwdriver Shaft

Cat. No. 7136-2290



REFLECTION Captured Flexible Screwdriver Shaft

Cat. No. 7136-2291



REFLECTION Captured U-Joint Screwdriver Shaft

Cat. No. 7136-2292



REFLECTION Straight Screwdriver Shaft

Cat. No. 7136-2293



REFLECTION Ball Joint Screwdriver

Cat. No. 7136-2295



REFLECTION Screw Forceps

Cat. No. 7136-2298



REFLECTION Mallet

Cat. No. 7136-2106



REFLECTION Depth Gauge

Cat. No. 7136-2012

REFLECTION[◇] Acetabular Components

Catalog



REFLECTION XLPE Acetabular Liners

REFLECTION XLPE Lateralized (+4mm) Liners

I.D. (mm)	O.D. (mm)	Liner Size	REFLECTION XLPE Acetabular Liners			REFLECTION XLPE Lateralized (+4mm) Liners		
			0° Liner Cat. No.	20° Liner Cat. No.	35° Liner Cat. No.	0° Liner Cat. No.	20° Liner Anteverted Cat. No.	20° Liner Cat. No.
22	42	B	7133-3351	7133-3301		7133-3451	7133-3401	
22	44	C	7133-3352	7133-3302		7133-3452	7133-3402	
22	46-48	D	7133-3353	7133-3303		7133-3453	7133-3403	
22	50-52	E	7133-3354	7133-3304		7133-3454	7133-3404	
22	54-56	F	7133-3355	7133-3305		7133-3455	7133-3405	
22	58-60	G	7133-3356	7133-3306		7133-3456	7133-3406	
22	62-64	H	7133-3357	7133-3307		7133-3457	7133-3407	
22	66-68	J	7133-3358	7133-3308		7133-3458	7133-3408	
22	70-76	K	7133-3359	7133-3309		7133-3459	7133-3409	
26	44	C	7133-3362	7133-3312		7133-3462	7133-3412	
26	46-48	D	7133-3363	7133-3313		7133-3463	7133-3413	
26	50-52	E	7133-3364	7133-3314		7133-3464	7133-3414	
26	54-56	F	7133-3365	7133-3315		7133-3465	7133-3415	
26	58-60	G	7133-3366	7133-3316		7133-3466	7133-3416	
26	62-64	H	7133-3367	7133-3317		7133-3467	7133-3417	
26	66-68	J	7133-3368	7133-3318		7133-3468	7133-3418	
26	70-76	K	7133-3369	7133-3319		7133-3469	7133-3419	
28	46-48	D	7133-3373	7133-3323	7133-9946	7133-3473	7133-3423	7133-9846
28	50-52	E	7133-3374	7133-3324	7133-9950	7133-3474	7133-3424	7133-9850
28	54-56	F	7133-3375	7133-3325		7133-3475	7133-3425	7133-9854
28	58-60	G	7133-3376	7133-3326		7133-3476	7133-3426	
28	62-64	H	7133-3377	7133-3327		7133-3477	7133-3427	
28	66-68	J	7133-3378	7133-3328		7133-3478	7133-3428	
28	70-76	K	7133-3379	7133-3329		7133-3479	7133-3429	
32	50-52	E	7133-3384	7133-3334		7133-3484	7133-3434	
32	54-56	F	7133-3385	7133-3335	7133-9354	7133-3485	7133-3435	7133-9254
32	58-60	G	7133-3386	7133-3336	7133-9358	7133-3486	7133-3436	7133-9258
32	62-64	H	7133-3387	7133-3337	7133-9362	7133-3487	7133-3437	7133-9262
32	66-68	J	7133-3388	7133-3338		7133-3488	7133-3438	7133-9266
32	70-76	K	7133-3389	7133-3339		7133-3489	7133-3439	7133-9270
36	54-56	F	7133-3395	7133-3345		7133-3495	7133-3445	
36	58-60	G	7133-3396	7133-3346	7133-9658	7133-3496	7133-3446	
36	62-64	H	7133-3397	7133-3347	7133-9662	7133-3497	7133-3447	
36	66-68	J	7133-3398	7133-3348	7133-9666	7133-3498	7133-3448	
36	70-76	K	7133-3399	7133-3349	7133-9670	7133-3499	7133-3449	



REFLECTION® Acetabular Liners (Conventional Poly)

0° Liner Cat. No.	20° Liner Cat. No.	I.D. (mm)	O.D. (mm)	Liner Size
7174-2042	7174-2242	22	42	B
7174-2044	7174-2244	22	44	C
7174-2046	7174-2246	22	46-48	D
7174-2050	7174-2250	22	50-52	E
7174-2054	7174-2254	22	54-56	F
7174-2058	7174-2258	22	58-60	G
<hr/>				
7174-0644	7174-2644	26	44	C
7174-0646	7174-2646	26	46-48	D
7174-0650	7174-2650	26	50-52	E
7174-0654	7174-2654	26	54-56	F
7174-0658	7174-2658	26	58-60	G
<hr/>				
7174-0846	7174-2846	28	46-48	D
7174-0850	7174-2850	28	50-52	E
7174-0854	7174-2854	28	54-56	F
7174-0858	7174-2858	28	58-60	G
7174-0862	7174-2862	28	62-64	H
7174-0866	7174-2866	28	66-68	J
7174-0870	7174-2870	28	70-76	K
<hr/>				
7174-0250	7174-3250	32	50-52	E
7174-0254	7174-3254	32	54-56	F
7174-0258	7174-3258	32	58-60	G
7174-0262	7174-3262	32	62-64	H
7174-0266	7174-3266	32	66-68	J
7174-0270	7174-3270	32	70-76	K



REFLECTION Trial Shells

Cat. No.	O.D. (mm)	Cat. No.	O.D. (mm)
Standard Size Trial Shells		Small Size Trial Shells	
7136-2345	45	7136-2340	40
7136-2346	46	7136-2341	41
7136-2347	47	7136-2342	42
7136-2348	48	7136-2343	43
7136-2349	49	7136-2344	44
7136-2350	50		
7136-2351	51	Large Size Trial Shells	
7136-2352	52	7136-2365	65
7136-2353	53	7136-2366	66
7136-2354	54	7136-2367	67
7136-2355	55	7136-2368	68
7136-2356	56	7136-2369	69
7136-2357	57	7136-2370	70
7136-2358	58	7136-2371	71
7136-2359	59	7136-2372	72
7136-2360	60	7136-2373	73
7136-2361	61	7136-2374	74
7136-2362	62	7136-2375	75
7136-2363	63	7136-2376	76
7136-2364	64	7136-2377	77
		7136-2378	78
		7136-2379	79
		7136-2380	80



REFLECTION Liner Impactor Head

Cat. No.	Size (mm)
7136-2222	22
7136-2226	26
7136-2228	28
7136-2232	32
7136-3622	36



REFLECTION Trial Shell Handle
Cat. No. 7136-2297



REFLECTION Positioner/Impactor
Cat. No. 7136-2299



**Positioner/Impactor
Replacement Tip**
Cat. No. 7136-2109



REFLECTION Liner Removal Tool
Cat. No. 7136-2296

REFLECTION[®] Acetabular Components

Catalog



REFLECTION Screw-in Trial Liners

REFLECTION Lateralized (+4mm) Screw-in Trial Liners

I.D. (mm)	O.D. (mm)	Liner Size	REFLECTION Screw-in Trial Liners			REFLECTION Lateralized (+4mm) Screw-in Trial Liners		
			0° Liner Cat. No.	20° Liner Cat. No.	35° Liner Cat. No.	0° Liner Cat. No.	20° Liner Anteverted Cat. No.	20° Liner Cat. No.
22	42	B	7136-2243	7136-2242		7136-2235	7136-2238	
22	44	C	7136-2245	7136-2244		7136-2236	7136-2239	
22	46-48	D	7136-2247	7136-2246		7136-2249	7136-2248	
22	50-52	E	7136-2251	7136-2250		7136-2253	7136-2252	
22	54-56	F	7136-2255	7136-2254		7136-2257	7136-2256	
22	58-60	G	7136-2259	7136-2258		7136-2261	7136-2260	
22	62-64	H	7136-2263	7136-2262		7136-2265	7136-2264	
22	66-68	J	7136-2267	7136-2266		7136-2269	7136-2268	
22	70-76	K	7136-2271	7136-2270		7136-2273	7136-2272	
26	44	C	7136-2645	7136-2644		7136-2636	7136-2635	
26	46-48	D	7136-2647	7136-2646		7136-2649	7136-2648	
26	50-52	E	7136-2651	7136-2650		7136-2653	7136-2652	
26	54-56	F	7136-2655	7136-2654		7136-2657	7136-2656	
26	58-60	G	7136-2659	7136-2658		7136-2661	7136-2660	
26	62-64	H	7136-2663	7136-2662		7136-2665	7136-2664	
26	66-68	J	7136-2667	7136-2666		7136-2669	7136-2668	
26	70-76	K	7136-2671	7136-2670		7136-2673	7136-2672	
28	46-48	D	7136-2847	7136-2846	7136-9946	7136-2849	7136-2848	7136-9846
28	50-52	E	7136-2851	7136-2850	7136-9950	7136-2853	7136-2852	7136-9850
28	54-56	F	7136-2855	7136-2854		7136-2857	7136-2856	7136-9854
28	58-60	G	7136-2859	7136-2858		7136-2861	7136-2860	
28	62-64	H	7136-2863	7136-2862		7136-2865	7136-2864	
28	66-68	J	7136-2867	7136-2866		7136-2869	7136-2868	
28	70-76	K	7136-2871	7136-2870		7136-2873	7136-2872	
32	50-52	E	7136-3251	7136-3250		7136-3253	7136-3252	
32	54-56	F	7136-3255	7136-3254	7136-9354	7136-3257	7136-3256	7136-9254
32	58-60	G	7136-3259	7136-3258	7136-9358	7136-3261	7136-3260	7136-9258
32	62-64	H	7136-3263	7136-3262	7136-9362	7136-3265	7136-3264	7136-9262
32	66-68	J	7136-3267	7136-3266		7136-3269	7136-3268	7136-9266
32	70-76	K	7136-3271	7136-3270		7136-3273	7136-3272	7136-9270
36	54-56	F	7136-3655	7136-3654		7136-3657	7136-3656	
36	58-60	G	7136-3659	7136-3658	7136-9658	7136-3661	7136-3660	
36	62-64	H	7136-3663	7136-3662	7136-9662	7136-3665	7136-3664	
36	66-68	J	7136-3667	7136-3666	7136-9666	7136-3669	7136-3668	
36	70-76	K	7136-3671	7136-3670	7136-9670	7136-3673	7136-3672	

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